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THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF ANIMAL INDUSTRY

FIFTH ANNUAL REPORT

OF THE

Commissioner of Animal Industry

NOVEMBER 30, 1916

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FIFTH ANNUAL REPORT

Massachusetts. Dept of animal industry

OF THE

COMMISSIONER OF ANIMAL INDUSTRY.

1916.

For the Year ending November 30, 1916.

BOSTON:
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1917.

Publication of this Document
approved by the
Supervisor of Administration.

The Commonwealth of Massachusetts.

Department of Animal Industry,
Boston, Dec. 1, 1916.

To the Honorable Senate and House of Representatives.

In accordance with the provisions of section 4, chapter 608, Acts of 1912, which act is entitled "An Act to abolish the Cattle Bureau of the State Board of Agriculture, and to create a Department of Animal Industry," I have the honor to present to the General Court the fifth annual report of the work accomplished by this Department during the fiscal year ending Nov. 30, 1916.

The Department of Animal Industry is charged with the duty of inspection and examination of animals within the Commonwealth, the quarantining and killing when necessary of animals affected with, or which have been exposed to, contagious disease, the burial or other disposal of their carcasses, and the cleansing and disinfection of districts, buildings or places where contagion exists or has existed. It is also charged with the duty of tuberculin-testing all neat cattle shipped from other States to Massachusetts unless the same are intended for immediate slaughter or have been tested before shipment, and the record of test approved by the live-stock official of the State from which they are shipped, and accepted by this Department.

The control and eradication of contagious diseases among live stock constitute an important economic factor in the material prosperity of the citizens of the Commonwealth, and are also closely related to the maintenance and protection of the public health, for the reason that many diseases affecting animals are communicable to the human subject. The eradication of foot-and-mouth disease, the reduction of the number of cases of tuberculosis, the prevention of diseases among swine, the repression of glanders in horses, rabies in dogs, and various other diseases common to animals and man, make evident the importance of the work of this Department in these respects,

Mass. Dept. Animal Industry 4-23-19

not alone through the conservation of food material, but through the decreased possiblity of infection from the consumption of infected animal products. Our dependence upon domestic animals available as food material makes apparent the importance of prevention of diseases among them and of increasing their numbers.

An epidemic of disease of any kind among animals whose carcasses are utilized as food causes a shortage in the supply, and increased prices immediately follow. When we consider that in the whole United States during the year 1915 the carcasses of 400,000 animals were condemned as unfit for human food, we may realize what a large part disease among live stock plays in making food expensive. If tuberculosis among cattle and cholera among swine (taking these diseases as examples) were entirely stamped out, all the carcasses now being destroyed would be added to the food supply, together with many others whose production the saving of these would make possible.

The year just brought to a close has been one in which the Department has been called upon for a full exercise of its duties. Foot-and-mouth disease, a serious affection of cattle, sheep and swine which prevailed in many portions of the State and country during the year 1914 and a part of 1915, has not appeared during the past year, but it was not until June 5 of the present year that the United States Department of Agriculture declared that it had been entirely eradicated from the country, and removed all quarantine restrictions which had been imposed on account of it. Late in November an outbreak of this disease was reported among animals in the States of Kansas, Missouri and Nebraska, and consequently immediate steps were taken by this Department to prevent its introduction into Massachusetts in case the reported diagnosis should be confirmed. Fortunately, however, it proved to be not foot-and-mouth disease, but an affection closely resembling the same in certain of its symptoms, though of very much less danger to live-stock interests, and a few days sufficed to remove our apprehension that another visitation of this plague was imminent. Although a sufficient length of time has not yet elapsed to absolutely prove that this disease may not be lurking in some hidden locality, yet we feel sure that, on account of the constant care and watchfulness on the part of all cattle owners, veterinarians and live-stock officials, a serious outbreak of this disease or its widespread prevalence in the near future need not be apprehended. Out of the recent visitation of this plague has come experience which should be of great value in case the State is ever again visited by this or any other highly infectious animal disease.

In case of an outbreak of foot-and-mouth disease it is necessary that prompt measures be taken for its suppression on account of the rapidity with which the contagion spreads. In the recent outbreak which occurred in Massachusetts (1914–15) some delay was occasioned on account of the fact that officials charged with the extermination of contagious diseases among domestic animals had not the authority to take the necessary immediate steps for a systematic control of the contagion. Although the Commissioner of Animal Industry has authority to quarantine and kill animals affected with contagious disease, if in his opinion the public good so requires, he has not authority to kill animals exposed to the disease, or to destroy property on infected premises which in his opinion may be a source of danger. In the extermination of foot-and-mouth disease it becomes necessary to destroy not only the animals affected with the disease, but all those which have been exposed to it, and in the process of complete disinfection of the premises on which the diseased or exposed animals are kept it becomes necessary to destroy other property, such as parts of buildings, hay, grain, fodder, utensils, clothing, etc. No authority is given by law to the Commissioner of Animal Industry to appoint persons who may appraise live stock and other property the destruction of which becomes necessary in the suppression of this disease. I therefore desire to recommend to your honorable body the passage of an act giving the Commissioner of Animal Industry authority to order the killing of neat cattle and other domestic animals affected with, or which have been exposed to, foot-and-mouth disease when in his opinion the public good so requires, and also giving him such authority as is necessary to provide for the disposal of carcasses and the disinfection of districts, buildings and places in which the disease has existed, and for the destruction of property which may be contained therein; also the authority to appoint appraisers of live stock and other property the destruction of which may be considered necessary in the extermination of this disease.

Tuberculosis, hemorrhagic septicemia, anthrax and anthracoid diseases among bovine animals, glanders affecting horses, mules and asses, rabies affecting dogs and other animals, cholera and other diseases of swine, and various diseases of sheep have engaged the activities of the Department in many different sections of the State during the past year. Prompt investigation and effective control work, as circumstances required, have eradicated or satisfactorily limited the prevalence of these diseases.

The occurrence of diseased conditions known as "contagious or infectious abortion" in herds of cows kept for the production of milk and of pure-bred stock is of most serious importance to all cattle owners engaged in these ventures. This disease with its attendant conditions, which is estimated to be costing cattle owners of the United States $20,000,000 a year on account of non-production of animals and decrease in the amount of dairy products, is second in importance only to tuberculosis, and is rapidly being recognized as another very serious condition which the dairy industry of the country must combat. Reports from many sections of the State indicate that the disease is prevalent to a great extent among our herds. Officials of the Federal Bureau of Animal Industry, many men connected with State educational institutions, and private veterinary practitioners are studiously investigating this disease and its correlating conditions in both the field and the laboratory, with the hope that eventually some means may be developed of successfully combating and controlling this scourge. Thus far control has been in a measure obtained by isolation, antiseptic treatment of infected animals, disinfection and sanitation of barns and places where the infected animals are kept. Great emphasis, however, is to be placed on the adoption of preventive measures. The Unites States Bureau of Animal Industry has published bulletins on this particular phase of the subject, which may be had upon application to this Department or to the Bureau of Animal Industry at Washington. The Federal Bureau has also maintained at public stock shows an exhibit devoted to illustrating simple and preventive control methods which government authorities have found to be effective and which may be put into practice by stock owners. Congress has made available an appropriation of $50,000 for the purpose of experimenting as to the cause, mode of dissemination and method of treatment of this disease. The co-operation of our State Department has been extended to the Federal authorities in this work, believing it to be a subject which vitally interests the cattle owners of our Commonwealth.

The United States Bureau of Animal Industry is at present engaged in an investigation regarding the prevalence of so-called influenza or shipping fever affecting horses throughout the country, and has made application to Congress for an appropriation to carry on the work of control and eradication of this disease, which annually causes the death of large numbers of valuable animals. The Bureau has requested our assistance and co-operation in this matter also, and has been assured not only of our co-operation but of the fact that undoubtedly when ready to commence work all parties interested will be glad to assist to the extent of following out and executing such regulations as may be promulgated for the control of this disease.

During the year it has been found necessary to prosecute only one person for infraction of the regulations of this Department. A few instances of interstate shipment of animals suspected of being affected with a contagious disease have been brought to the attention of the Federal authorities, who have promptly taken action on the same.

The holding of the National Dairy Show at Springfield in October of this year was considered by this Department as of great advantage to our live-stock interests, and therefore we early informed the management that we would be glad to render what assistance we could toward making the show a success. An agent of the Department was detailed to attend the exhibition and assist in the identification and examination of dairy animals shipped interstate to and from the show accompanied by certificates of tuberculin test. Eight hundred and seventy-three animals were on exhibition, all of which were examined by our agent for symptoms of contagious disease. Owing to the very complete regulations of the management, whereby it was impossible to exhibit cattle which had not passed the tuberculin test, and owing to careful examination by the official veterinarian of the show and our own agents, no cases of contagious disease appeared. Eleven calves were born at the exhibition, and four deaths resulted from disease not of contagious character but due to exposure during shipment. Too much cannot be said as to the good effect of this exhibition of high-grade animals on the live-stock interests of the Commonwealth. Its educational value to all observers and its great convenience to intending purchasers of high-grade animals must be considered as of very great advantage to our agricultural and live-stock interests.

Rabies.

All species of warm-blooded animals are susceptible to rabies, cases of this disease having been reported in every species of domestic animals, in many species of wild animals and in man. Its prevalence requires special attention on the part of this Department, not only on account of its communicability to man, but for the reason that a certain amount of monetary loss is caused by it every year in the death of valuable dogs and a certain number of horses, cattle, sheep and hogs.

In the control of rabies only the dog need be considered as the means by which it is spread, and the dog without a home or an acknowledged owner is the one requiring special attention, as he is the one which is more often the spreader of the disease than is the animal which has proper care and a good home. No one being especially interested in the welfare of the ownerless dog, he may become affected with rabies and a spreader of the infection before he is observed to be in an abnormal condition, and even then it often happens that the attention of the proper official is not directed to him because no one is responsible for him.

If the dog-license laws were strictly enforced in all cities and towns in the State the ownerless and unlicensed dog would disappear, and a very great factor in the dissemination of this disease would be eliminated thereby. The matter of control and eradication of rabies is considerably less complicated than that of most other infectious diseases of animals, for the reason that the traffic in dogs is very much less than in the domestic animals which are used for the production of food material, and also because their market value is on an average very much less. Furthermore, they endure restraint well and can be kept in confinement at a relatively low expense as compared with the larger animals. Because of the liability of rabies to spread rapidly, measures for control should be taken immediately upon its outbreak in any particular community, by both municipal and State authorities.

There has been a marked diminution in the number of positive cases of rabies which have been found to exist in the State during the year just closed, but its control is at all times a very important matter from the standpoint of the public health alone. In my opinion very much more might be accomplished toward the eradication of this disease, as well as in the control of other contagious diseases of animals, if the Federal government would inaugurate a campaign against them, and the several States could be induced to co-operate to the extent of adopting uniform regulations applying to the carrying on of the work locally. It sometimes happens that in the investigation of a reported case of rabies we find that the animal has disappeared across the line into another State, and our investigation ceases at what is perhaps a critical point in the control of the disease.

Following is a general outline of the Department's methods in this work under the present regulations: —

Upon report being made to the Department of Animal Industry that a person has been bitten by a dog, the inspector of animals of the town or city in which it occurs is ordered to make an examination of the animal, and, even if it appears to be healthy, to have it restrained for a period of fourteen days for the purpose of observation. This regulation is deemed necessary for the reason that competent authorities have proven that in some instances the bite of a dog infected with rabies may communicate the infection fourteen days before the animal itself shows clinical symptoms. If at the end of this period no symptoms of rabies have developed, the animal may be released. In case a person is bitten by a dog which upon examination by the inspector of animals, or any other person, shows evidence of already being affected with rabies, this animal is immediately confined in strict quarantine. If it is subsequently killed or dies, its head is at once sent to the Department's office, and a laboratory examination of the brain is made for the purpose of confirming the diagnosis. Information as to the laboratory findings is promptly communicated to the person or persons who have been bitten. The State Department of Health is given the information received in every case of dog bite reported to this office, whether the bite has been inflicted by an animal suspected of rabies or not. We also order the local inspector of animals to ascertain not only the names of all persons who have been bitten by dogs suspected of rabies, but to find out if animals have also been bitten, and if so to place the same in quarantine for a period of at least ninety days. All dogs which are known to have been in contact with a rabid animal, whether or not it appears that they have been bitten by it, are also placed in quarantine for the same period.

If an unusual number of cases of rabies is found to exist in any town or city the selectmen or the mayor or board of aldermen are asked to issue a restraining order, under the provisions of section 158 of chapter 102 of the Revised Laws. Such an order obliges all dog owners to confine their animals to their own premises for a certain period, or take them therefrom only on leash. This restraining order is much more effective in the local control of an outbreak than is an order which compels owners only to muzzle the animals but not restrain them, as a muzzled animal let loose may in some way get the muzzle off and bite other animals or people. A muzzled dog at large may, therefore, become much more dangerous than an unmuzzled one which is at all times confined upon owner's premises or taken therefrom only on leash. Dogs found running at large while a restraining order issued by town or city authorities is in force may be killed on the issuance of a warrant for the same to a police officer. It has been found necessary to issue general restraining orders in only two towns of the Commonwealth during the past year. These orders were for periods of ninety days and have now expired.

Our force of district agents, most of whom are veterinarians located in different parts of the State, together with the local inspectors of animals, of whom there is one or more in every city and town of the State, constitutes an organization by which systematic local control of an outbreak of this disease can generally be accomplished within a reasonably short time. The Department is also assisted at every point by the earnest co-operation on the part of private veterinarians and dog owners, and by the various societies now active in preventing abuse and relieving suffering of dumb animals.

During the year ending Nov. 30, 1916, 253 animals were reported to the Department for diagnosis, observation or quarantine on account of the prevalence of rabies. The records have been classified as follows: —

Animals suspected of rabies,	67
Animals exposed to rabies,	47
Animals which have inflicted bites upon persons,	139

Animals suspected of Rabies.

	Dogs.	Horses.	Cattle.	Cats.
Diagnosis positive,	39	2	1	2
Diagnosis negative,	11	-	2	1
Diagnosis questionable,	5	-	-	1
No diagnosis made,	2	-	-	1

Of the 6 cases on which the diagnosis was questionable, 2 animals were killed by the police, 2 were killed by owners, 1 was reported suspicious on laboratory examination, and in 1 case laboratory examination of brain was impossible on account of contamination.

Of the 3 animals on which no diagnosis was made 2 were reported as killed by the police, and 1 was reported by a newspaper.

The above table shows 44 cases of rabies, 37 of which were of the furious form and 7 of the dumb form.

Animals exposed to Rabies.

	Dogs.	Horses.	Cattle.	Cats.
Number released after a quarantine of ninety days,	21	2	-	-
Number killed, no symptoms having developed, .	9	-	-	-
Number killed, positive symptoms having developed,	7	-	-	-
Number still held under observation, . . .	7	-	1	-

Animals which have inflicted Bites upon Persons.

	Dogs.	Horses.	Cattle.	Cats.
Number killed immediately, no diagnosis, . .	7	-	-	-
Number killed during quarantine, no symptoms having developed,	24	-	-	-
Number released after fourteen days' quarantine, .	98	-	-	1
Number still held under observation, . . .	4	-	-	-
Number not located, ...	5	-	-	-

Of the 39 rabid dogs in the first classification, 16 had bitten persons, and of the 2 rabid cats, 1 had bitten persons. Of the 5 dogs on which the diagnosis was questionable, 1 had bitten persons.

Of the 21 dogs exposed to rabies, 2 had been bitten by cats. One case was brought forward from the record of 1915.

Of the 98 dogs which had bitten people, and which were released at the end of fourteen days' quarantine, 8 were killed at request of the owners.

Seventy-one animals which were under observation at the close of the year 1915 were disposed of during 1916, as follows: —

Dog proven to be positive case and killed, ...	1
Dogs killed at request of owners, not having shown symptoms of the disease, ...	13
Dogs released from observation, no symptoms having developed, .	54
Cattle released from observation, no symptoms having developed, .	2
Horse released from observation, no symptoms having developed, .	1

A study of the above table shows a decrease in the number of positive cases of rabies from 226 in 1915 to 51 in 1916. The number in 1916 equals the smallest number shown on the

Department's records during the past twelve years, the highest number recorded in those years being 662 in 1907, and the smallest being 51 in 1910, as shown below: —

1905,	98	1911,	121
1906,	293	1912,	90
1907,	662	1913,	205
1908,	454	1914,	250
1909,	126	1915,	226
1910,	51	1916,	51

There have been examined in the laboratory during the past year the brains of 52 dogs, 2 cows and 3 cats. Of this number, 22 dogs and 2 cats showed positive evidence of the infection. In the cases of 5 dogs and 1 cat the diagnosis was questionable, and in 30 dogs, 2 cows and 1 cat the diagnosis was negative. Of the 253 animals reported for observation, diagnosis or quarantine, 34 were, as far as the Department could determine, unlicensed and ownerless dogs, 11 of which proved to be positive cases of the disease.

The following table shows the number of positive cases of rabies by cities and towns: —

Attleboro,	1	Lynn,	2
Boston,	2	Malden,	1
Bridgewater,	1	Medford,	2
Cambridge,	1	Millbury,	1
Chelsea,	3	Needham,	2
Douglas,	1	Newton,	1
Everett,	1	Norwood,	2
Fitchburg,	2	Southbridge,	1
Great Barrington,	2	Spencer,	8
Greenwich,	1	Walpole,	1
Haverhill,	1	Waltham,	1
Hopedale,	1	Westhampton,	4
Hull,	1	Weston,	1
Ipswich,	1	Worcester,	1
Leicester,	3		
Lexington,	1	Total,	51

The history of one case of rabies in a horse, which is of considerable interest, may be detailed as follows: —

On Aug. 4, 1915, a dog disappeared from the city of Springfield, was found in the town of Greenwich affected with rabies, and was killed. A quarter of a mile distant from the place where this dog was killed a mare and her colt were at pasture, and on August 27 the mare developed rabies and was killed. During the furious stage of the disease she inflicted a bite on her foal. This foal was kept under observation, but showed no symptoms of the disease until March 6, 1916, when it developed positive symptoms and was destroyed. This being five and one-half months after the bite had been inflicted makes the case of particular interest as showing the long period of incubation which sometimes exists in the disease when affecting the equine animal. A previous case in the records of the Department for the year 1911 showed similar interesting facts. In that year a rabid dog bit three horses in the town of Topsfield, one of which developed rabies at the end of six weeks, another at the end of three and one-half months, and the third animal at the end of ten months. These facts call attention to the necessity of keeping horses which have been bitten by rabid animals under observation for a long period of time.

Glanders.

The prevalence of glanders among horses, mules and asses owned in the Commonwealth is one of deep concern to the officials of this Department. The problems connected with its suppression are many and difficult of solution. Four hundred or more positive cases of the disease have been yearly recorded for the past eighteen years, and in 1913 the alarming number of 1,084 horses were killed on account of being affected. The average yearly record for this period is 752 cases. The yearly average monetary loss occasioned by the death of these animals, based on a low valuation of $100 per animal, is more than $75,000.

This fact calls attention to the importance of control and eradication of this disease as an economic question alone. From a public health standpoint it is also of great importance, for the reason that occasionally a human being becomes affected with the disease by transmission from an equine animal.

The Department's records for the year ending Nov. 30, 1916, show the following facts: —

At the end of 1915, 18 animals were under observation. Of this number, 5 have been killed as positive cases, 10 have been released as free from the disease, 1 died before final diagnosis was made, and 2 are still held under observation.

During the past year 1,307 animals have been reported as being suspected of having glanders. Of this number, 430 animals proved to be positive cases and were destroyed in accordance with the requirements of the law, 27 died or were killed by owners before diagnoses had been made, 811 were released as free from the disease, and 37 were still held under observation at the end of the year. Two animals were killed by order of the Department, post-mortem examination of which did not reveal the presence of the disease, and full appraised value of the same was paid to the owners.

Following is a table giving the number of cases of this disease covering a period of eighteen years. In this table cases which have occurred in the city of Boston are shown separately, on account of the fact that Boston has always been the storm center of this disease. Special tabulation of the number of cases in that city is always made, in order that its relative importance to other sections of the State may be studied.

Number of Cases.

YEAR.	CASES.		
	In Boston.	In Other Places.	Totals.
1899,	159	384	543
1900,	192	507	699
1901,	197	548	745
1902,	155	580	735
1903,	250	610	860
1904,	254	555	809
1905,	210	414	624
1906,	194	376	570
1907,	308	403	711
1908,	389	552	941
1909,	278	406	684
1910,	314	362	676
1911,	387	565	952
1912,	395	446	841
1913,	556	528	1,084
1914,	355	495	850
1915,	152	250	402
1916,	157	278	435

As shown by the above table, there have been five more cases found in the city of Boston than during the previous year. A much larger increase was expected on account of the more general application of the different diagnostic tests to all the animals in stables from which glanders cases have been removed and, as a result of these tests, the destruction of all animals which in our opinion were affected with the disease, even though they were not showing clinical symptoms of the same. In these stables tests which have been made in the city of Boston 604 horses have been subjected to the test, and among them 48 cases of glanders have been found which otherwise would have escaped observation; so that although the records show an increase of 3 per cent. in the number of animals killed in Boston during the year, we feel that much more progress has been made in the work of suppression of this disease than during any previous year. A larger percentage of increase in the number of animals killed is shown in cities and towns outside of Boston, such increase being 11 per cent., and the increase for the State as a whole being 8 per cent. Again, it may be said that the increase in the number of animals found to be diseased has been in a large measure due to the greater number tested during the past year, the number of samples of blood which have been examined having increased from 670 in 1915 to 1,327 during the year 1916.

Among 21 horses shipped from Canada in one carload early in the year, 12 were soon afterwards found to be affected with glanders and were destroyed. Canadian authorities were immediately notified of this outbreak, and they at once started investigation as to the probable source of the contagion. Their report was to the effect that no evidence of the disease was found at the point where the shipment originated, but that as the animals were some sixteen days making the journey, and were unloaded at seven different points on the way in yards which had been used for the collection of large numbers of export horses, in which yards animals affected with glanders had frequently been found, it was decided that undoubtedly the disease was contracted at some of these unloading stations. As the United States Bureau of Animal Industry maintains inspection service on the Canadian line, and all animals imported from that country are supposed to be subjected to careful examination before entering the United States, the Bureau was immediately notified of this occurrence and requested to carefully inspect all future shipments of Canadian horses to Massachusetts.

The Department has continued the policy of promptly killing all animals showing clinical symptoms of glanders, of disinfecting the premises where they have been stabled, the blacksmith shops in which they were shod, and the public watering troughs where they were in the habit of drinking. To effectively aid in the complete disinfection of premises from which diseased animals have been removed owners have been requested to tear out mangers, loose boarding and such other portions of the stall as the animals had come in close contact with, or upon which might have been deposited any discharges from their respiratory passages. We have required that this disinfection be attended to by the owners of the premises before approving their claims for reimbursement.

Frequent inspection has been made of all animals on premises where the disease has been found to exist, so that its spread from the original case might be noted and prompt action taken to destroy any new centers of infection which might have become established. The result of such frequent inspection has been that many cases have been found and destroyed which otherwise would have escaped notice.

In my opinion constant work in the testing of equine animals by the different methods now applicable will finally result in gradually diminishing the prevalence of this disease.

In addition to the complement-fixation, or so-called "blood test," and the ophthalmic-mallein, or so-called "eye test," both of which have been continued during the past year, we have made arrangements to inaugurate the "agglutination" test. All of these tests are of great value for diagnostic purposes, and their application to suspected animals, especially those which do not show clinical symptoms, is of material aid in forming conclusions regarding the existence of the disease. By their use, also, earlier diagnoses of doubtful cases are possible, and the result is that many animals are destroyed earlier in the progress of the disease than would happen if diagnoses depended upon the exhibition of clinical symptoms alone. A careful record of post-mortem examinations of animals to which these tests have been applied has proven that they are accurate in a high percentage of cases.

Complement-fixation Test.

Of the 18 horses under observation at the end of the year 1915, 11 were subjected to the complement-fixation test, with result that 3 were condemned and killed, 6 were released as probably free from the disease, and 2 are still under observation.

Thirteen hundred and twenty-seven samples of blood were taken from 1,034 horses during the year 1916, and the following disposition of the animals was made: —

Animals held over from 1915, disposed of as above,	11
Animals released on first test,	689
Released on second test,	70
Released on third test,	28
Released on fourth test,	3
Died or killed by owner after first test,	11
Died or killed by owner after second test,	2
Condemned on first test,	123
Condemned on second test,	40
Condemned on third test,	19
Condemned on fourth test,	7
Condemned on fifth test,	1
Held for further observation,	30
	1,034

From 3 of the 30 horses still held under observation one sample of blood has been taken; from 14 others two samples have been taken; from 8 others three samples; and from the remaining 5, four samples.

Ophthalmic-mallein Test.

This test has been applied to 816 horses during the year, it happening in many instances that the test was repeated on the same animals, 1,004 such tests having been made with the following results: —

Tests giving positive reaction,	205
Tests giving no reaction,	689
Tests giving unsatisfactory results,	110
	1,004

Animals which for any reason have been suspected of being diseased either as a result of contact with other diseased animals or as a result of the different tests, but which have not shown sufficient clinical symptoms to warrant condemnation, have in some instances been quarantined, frequently examined, and allowed to work under certain conditions. We have found in some instances that contact animals apparently in perfect health have temporarily reacted to one of the tests applied and at a later date have ceased to react to the same. It has therefore not been thought justifiable to kill valuable animals which, having reacted to only one of the tests above mentioned, did not also show clinical symptoms, if they appeared to be in a good condition of health. These so-called temporary reactors have, however, been carefully watched, subjected to frequent tests, and upon reacting persistently to either one or both of the tests have been destroyed. Autopsies have been made on condemned animals in every case where there has been any conflict of the different tests, and in all other cases where practicable.

The use of subcutaneous mallein for the testing of suspected animals is not advised by the Department, for the reason that it may interfere with the correctness of any blood test subsequently found advisable.

It is our opinion that an important factor in the control of glanders is the closing of public watering troughs. If any unusual number of cases has been found to exist in any town or city the authorities have been requested to immediately close all public drinking fountains. This action has invariably been followed by an early decrease in the number of cases reported, in some instances no additional cases being reported thereafter. At the present time, in 21 cities and towns of the Commonwealth, the public watering troughs have either been closed or entirely eliminated.

In my opinion the closing of the public drinking places for animals has operated to limit the spread of contagious diseases other than glanders, and the practice of watering animals from individual pails carried for the purpose is one to be encouraged, not only from the standpoint of the control of glanders, but also of many other diseases of a contagious character. We find that horse owners and team drivers are already acknowledging the beneficial results of this method of watering animals under their charge, and do not think it advisable to return to the former method of making use of the public troughs.

Another factor in the suppression of glanders is the disinfection of blacksmith shops. Following the condemnation of an animal affected with this disease the proprietor of the blacksmith shop in which this particular animal was shod has been directed to immediately disinfect the premises. Frequent inspection of blacksmith shops by agents of the Department has undoubtedly been a factor in securing frequent disinfection by their owners or occupants, and without doubt this practice has limited the prevalence of this disease to a great degree. One hundred and thirty-one blacksmith shops have been visited by our agents during the year, and instructions given relative to disinfection.

The Massachusetts Society for the Prevention of Cruelty to Animals, the Boston Workhorse Relief Association, the Animal Rescue League, and the branches of these various associations in many cities and towns of the State, have through their agents been of material aid to the Department in the work of controlling this disease. Their close observation of working animals of all classes has brought to light many showing suspicious symptoms, which they have promptly reported to this Department, and many of the animals so reported have proved to be positive cases of the disease.

The constant activity of the humane societies in removing disabled animals from work, and destroying those which on account of extreme age or poor condition are no longer useful, is undoubtedly a factor in the suppression of glanders, as animals of the class referred to are very susceptible to this infection.

The maximum amount fixed by chapter 646 of the Acts of 1913 which may be paid for any one animal condemned and destroyed on account of being affected with glanders being $50, the appraised value of the animals destroyed is a subject of considerable interest. Of the 435 positive cases of glanders occurring during the year, 357 were appraised at a total valuation of $48,800, the average amount per animal being $136.69. On the remaining 78 animals affected with glanders no appraisal was made, for the following reasons: —

Twenty-five were reported by renderers, found on autopsy; 14 died, not having been condemned by order of the Department; 10 were killed by owners, and 29 had not been in the State twelve months, the period prescribed by law that a condemned animal must have been within the State for compensation to be allowed.

Of the 357 appraised animals payment has already been made on 273, the total appraisal of which was $39,865, an average of $146 per animal.

Interstate Horses.

Horses, asses and mules shipped to Massachusetts from the States of New York, Connecticut and Rhode Island must be accompanied by a permit from the Commissioner of Animal Industry. This regulation was established on account of the prevalence of glanders among the horses of the States mentioned, and in order that upon arrival the animals might be immediately located and examined by agents of this Department.

The number of horses, mules and asses shipped from these States has increased from 3,679 in the year 1915 to 4,500 in the year ending Nov. 30, 1916. This increase is partly due to the removal of restrictions on live-stock shipments which were in force during the previous year on account of foot-and-mouth disease. Among these animals very few cases of glanders have been found, as shown by the following statistics: —

Equine Animals from New York, Connecticut and Rhode Island.

Mules,	12	
Donkeys,	1	
Horses,	4,487	
		4,500

Disposition of Above Animals.

Died soon after arrival,	2	
Condemned as affected with glanders,	3	
Released upon physical examination,	4,412	
Released after test,	83	
		4,500

The small number of animals condemned, as shown by the above table, is worthy of notice. Most of the animals brought from the above-mentioned States are of the better class, many of them being highly bred horses used for carriage work and breeding purposes, a small percentage only being second-hand horses which are trafficked in and sent from the markets of one State to those of another for purpose of public sale. This latter class of animals has been specially watched on account of their being considered more liable to be subjects of contagious disease than the higher class animals.

HOG CHOLERA.

The proper method of controlling hog cholera has been a subject of discussion among live-stock sanitary authorities for several years. Since the discovery of anti-hog cholera serum and hog cholera virus it has been generally agreed that the simultaneous treatment and a comprehensive plan for disinfection of infected premises are absolute essentials. This combination offers the most promising method of controlling this disease. While it is generally conceded that the simultaneous treatment is one of the greatest immunization processes known to preventive medicine, we must at the same time bear in mind that it is the only known immunization process in which the unattenuated causative agent of the disease is used. The treatment properly used is not only possessed of many beneficial possibilities, but is a practical necessity in controlling the disease, at least under conditions existing in Massachusetts. When the treatment is improperly applied, or when either the serum or virus is not of a sufficiently high standard, the treatment may be, and frequently has been, the means of spreading rather than preventing the disease. Previous to 1915 practically all of the States had failed to take cognizance of this great danger, and had allowed this valuable immunization process to be subjected to abuse and become a failure, as well as permitting the spread of the disease by allowing the treatment to be used promiscuously by unqualified persons, or by the use of inferior serum or virus.

Believing that this was the weakest part of all control plans which had up to that time been proposed, and that in order to prevent the spread of the disease it must be handled exclusively by the State, the Department of Animal Industry in January, 1915, placed restrictions on the use of anti-hog cholera serum and hog cholera virus in Massachusetts, and formulated a control plan which briefly is as follows: —

1. All anti-hog cholera serum and hog cholera virus coming into the State of Massachusetts must be subjected to a test by this Department, regardless of all previous tests. This test is both physiological and bacteriological, and is made upon each lot as represented by a serial number.

2. Both the serum and the virus are kept under the care of the Department from the time of receipt.

3. Serum and virus can be used only by agents employed by and responsible to this Department.

4. Application for treatment must be made to the Department by the owner of swine, who agrees to our plans for quarantine, disinfection, proper care of the animals, etc.

5. The owner pays only for the serum and the virus, this Department defraying all other expenses.

When this plan was formulated its practicability was a matter of conjecture, inasmuch as it was radically different from any other that had previously been proposed. After two years of its application we feel that we are in a position to form conclusions and present comprehensive statistics as to its value. When these are studied and compared with the results obtained in other sections of the country, where the proper restrictions are not enforced, it must become apparent to all, as it is to us, that under New England conditions, at least, the general application of the simultaneous treatment is absolutely essential in both infected and non-infected herds. This cannot be safely carried on except under the most stringent State control, similar to the plan outlined above. The remarkable results shown in the following report can be obtained only where such proper control methods are adopted and enforced. Until this is done our neighboring States are bound to be fertile grounds for the spread of the disease, both because of the need of more universal application of the serum treatment, and on account of the improper application of much of the treatment which is being administered. After a control plan such as ours is established and enforced faulty technique becomes minimized, and serum and virus of inferior quality or containing large numbers of dangerous bacteria cannot be sold to an unsuspecting public with only the word of the manufacturer as to its reliability. Thus the spread of cholera and other diseases from these products becomes minimized, and the consumer is given the maximum protection at the minimum cost.

After the campaign in this State was started our services were called for, during the first few months, only in the badly infected "garbage-fed" piggeries where hog cholera had existed for many years, and where large numbers of young animals had died annually. This was rapidly followed by requests for treatment from the majority of the State institutions. The results, as set forth in previous reports, were so uniformly good that the skepticism which was at first apparent on the part of the swine owners was soon replaced by their confidence and co-operation. This has continued during the past year to such a marked extent that at the present time there are only a very few of the large piggeries where all swine are not being immunized as rapidly as they reach the proper age.

The plan which is followed in these herds after the brood animals have been immunized is to give 20 c.c. (mils.) of serum to all pigs when they are weaned (age about six weeks). When they reach the age of three months, at which time garbage-fed pigs generally approximate 40 pounds in weight, they are given 30 c.c. (mils.) of serum and 1 c.c. (mil.) of virus, unless perchance they do not weigh 40 pounds, in which case they are again given the "serum only" treatment. This method has completely eliminated cholera losses in a large percentage of the piggeries in this State, where previously the annual losses of hundreds of young pigs were causing a rapid decrease in the total number of swine in the State.

From 1912 to 1914 the number of swine in this State decreased with alarming rapidity. This condition is now reversed, and the number of swine is rapidly increasing, in spite of the fact that garbage as a food is becoming increasingly harder to procure in large quantities, and that grain during the year has sold at an unprecedentedly high figure. The long-continued high price of pork has also been an inducement to many to sacrifice large numbers of animals which ordinarily would have been retained for brood purposes. Notwithstanding these conditions, swine are being kept in larger numbers to-day than for several years. The increases are mostly in the larger herds, where formerly only about 50 per cent. of the pigs born each year could be raised, the remainder dying with cholera. In the same herds it was the rule to purchase new animals only when absolutely necessary, because the owners had learned from experience that it was not possible to purchase new stock without enormous losses shortly after delivery. The same stock-men are now able to purchase and add to their herds any number of swine without losses, providing all newcomers are immunized as they enter the infected piggery. This is the main reason for the increase, and we believe that it will result in doubling the number of swine in the State in the very near future.

It is rather difficult to estimate the saving to the owners, but undoubtedly the value of the animals treated during the past year could be estimated very closely to $500,000, at a cost to the owners for serum and virus of $21,698.41. The losses from cholera which have in past years been constant in practically all of the large State institutions have been completely eliminated in all the herds in which our services have been requested. Undoubtedly the saving represented by the elimination of the yearly loss from cholera in these State institution herds alone would more than offset the entire amount of money spent by this Department in its control work against hog cholera. Many of these institutions are now selling swine, whereas formerly they could not raise a sufficient number to consume all their garbage.

As in all forms of preventive medicine, the real value of this treatment is in its application before the animals become infected. During the first year of our work practically every herd to which we were called upon to administer treatment showed enormous numbers of animals dead and dying. It was but natural that as the result of our immunization work in these herds became apparent, together with our educational propaganda, the demand for the treatment in non-infected herds should increase. It is therefore most gratifying to study our statistics which follow, showing the increase in both infected and in non-infected herds in which the treatment is being carried on.

	1914.	1915.	1916.
Infected herds,	65	150	192
Non-infected herds,	2	95	113
Totals,	67	245	305

Both the above and the table which follows show a decided tendency among swine owners to immunize their swine before the animals become infected. This is a most encouraging sign, which is further manifested by the large decrease in actual outbreaks of cholera which have occurred during the past year, thus giving rise to the hope that eventually, by continuing the plan which we are now pursuing, the amount of hog cholera in the State will reach a minimum, due to the fact that available swine upon which hog cholera can propagate itself will reach a minimum, because of the large number of susceptible animals which will have been immunized.

The mortality following the administration of the serum treatment under our control plan is the lowest which has been obtained under field conditions in any extensive campaign to control this disease. In non-infected herds where the treatment has been applied as a preventive we have, during the three years, treated 8,624 animals in 210 herds, following which only 1 has died from hog cholera. During two of the three years there has been no mortality. In badly infected herds the number of animals treated has increased from 5,019 in 1914 to 28,388 treated in 1916. At the same time the total mortality in infected herds, following both "serum only" and the simultaneous treatment, has decreased from 11.5 per cent. in 1914 to 4.3 per cent. in 1916. During the same time the mortality following the simultaneous treatment in infected herds which has been applied to "apparently healthy" animals has decreased from 2 to .6 per cent. While this does not at first appear to be a decided decrease, it must be recalled that the original mortality of 2 per cent. is far lower than is obtained in most places where the simultaneous treatment has been applied, and therefore a further reduction of 1.4 per cent. is gratifying.

We know of no case where the treatment when applied by our agents has been the cause of spreading the disease either in infected or in non-infected herds. It proves conclusively to our minds that the danger commonly associated with the simultaneous treatment is eliminated when the treatment is properly applied under State control, and the serum and virus to be used have been properly tested. It further substantiates the belief that the general application of the simultaneous treatment is absolutely necessary if hog cholera is to be controlled. Many of the herds which have been infected for years previous to our assuming control, and in which treatment is now being carried on, have not had a case of cholera in months, and during the coming year it will undoubtedly be possible to classify and consider them as "exposed" rather than "badly infected" herds.

The table on facing page shows that during 1916 the number of animals which we were called upon to treat increased more than 100 per cent. over the number treated in 1915. It is reasonable to suppose that we will be called upon to care for a corresponding increase in 1917. Undoubtedly more agents will be required to handle the increase of work.

In herds where a diagnosis negative to cholera has been made, and in some herds which have been immunized against hog cholera, and where at a later date animals died under suspicion of hog cholera, it was found by examination that in many cases the animals were affected with parasitic infections. In a few cases the bacillus *necrophorus*, causing the so-called "foot-rot," has been the cause of the deaths. The most common complication, however, has been that of hemorrhagic septicemia. This has been seen both in herds which have been immunized and in those which have not. It is extremely difficult and frequently impossible, under ordinary field conditions, to differentiate between hog cholera and hemorrhagic septicemia. It became necessary, therefore, to determine the presence of hemorrhagic septicemia by animal inoculations and laboratory filtrations through the Berkfeldt filter. It is perfectly evident that both this disease and that of necrobacillosis are on the increase in this State, and must in the near future receive considerable attention.

TUBERCULOSIS.

The prevalence of tuberculosis among the animals owned in Massachusetts is of very great economic importance to its citizens. The immediate loss in cattle and hogs is considerable, and there is also great depreciation in the producing value of animals which are affected with this disease.

Comparative Statistics on Hog Cholera for 1914, 1915 and 1916.

	1914.	1915.	1916.
Number of herds reported as infected,	100	349	310
Negative diagnosis,	20	122	57
Number of known infected herds,	80	227	253
Infected Herds.			
Infected herds in which serum treatment was not administered,	–	77	43
Infected herds in which serum treatment was administered,	65	150	192
Number of swine known to have died in these herds previous to treatment,	900	3,080	1,777
"Serum only" treatment (infected herds), including infected animals and those too young for simultaneous treatment.	428	10,300	14,747
Mortality following "serum only" treatment (per cent.),	9.5	7	3.7
Simultaneous treatment, including "apparently healthy" animals in infected herds,	591	5,826	13,643
Mortality following simultaneous treatment (per cent.),	2	1.2	.6
Total number treated in infected herds,	1,019[1]	16,126	28,388
Total mortality following both "serum only" and simultaneous treatment in infected herds (per cent.),	11.5	8.2	4.3
Preventive Inoculation — Non-infected Herds.			
Animals inoculated,	104	863	7,657
Number of animals which died following inoculation,	–	1	–
Total number of animals treated,	5,123	16,989	36,045

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[1] Plus 4,000 which were treated, and died or were killed before results could be ascertained. These deaths were due to the use of serum which was impotent and virus which was not virulent, before the present regulations were made.

During the past twenty-five years the study of tuberculosis has received widespread attention on the part of many investigators, and it is still a field in which apparently much work remains to be done before any satisfactory solution of the problem of control and eradication can be arrived at. As the records of this Department show a continued widespread prevalence of this disease among cattle of Massachusetts, constant application of all the methods at hand should be made in order to limit its spread as much as possible.

During the year just brought to a close 1,393 bovine animals from herds owned in Massachusetts have been condemned and killed on account of being affected with tuberculosis, and in addition there have been 512 animals affected with this disease killed upon their arrival from other States. These figures show an increase of nearly 29 per cent. in the number of Massachusetts cattle condemned, and at first glance might indicate that the prevalence of the disease was increasing to that extent. This increased number, however, may be largely accounted for by the somewhat different methods pursued in the examination of herds in which has been found a tubercular animal and the herds classified as infected.

Under our present method a physical examination of the entire herd is made when one member of it is found to be tubercular, whereas formerly the examination was limited to the one quarantined animal, and if other cases were present they escaped observation. Therefore, it cannot be maintained without question that tuberculosis among dairy cattle is increasing in the degree which the above figures would indicate. It means that the number of existing cases is being more accurately determined.

Whether or not the disease among our neat cattle is increasing at all or diminishing is a question, however, which cannot be positively answered. The total number of animals affected cannot be determined with any degree of accuracy except upon a careful physical examination of all neat cattle in the State, supplemented by the application of the tuberculin test. While realizing that this test has its limitations, it is generally recognized as being the most reliable means of diagnosis at our command. The law specifies, however, that except in certain instances the test cannot be applied to cattle owned in Massachusetts except upon request of owners. We find that a largely increasing number of cattle owners are subjecting their herds to the test. This indicates an increased interest in the present situation, and from this fact alone it may be expected that great benefit will result in the solution of the problem of control.

We find that tuberculosis is more prevalent in certain herds and localities than in others, and it has been observed, in sections where the disease rarely occurs, not only that favorable climatic conditions and care in breeding and traffic contribute to the maintenance of health, but that the development and replenishment of herds in accordance with methods now recognized as most successful are specially favorable to the actual prevention of this particular disease.

The insidious nature of tuberculosis, its slow development to the point where its symptoms are apparent, prevents its recognition in the early stages. If the disease progressed more rapidly and produced recognizable symptoms or death within a few days, stock owners and others would undoubtedly take more active measures for its control.

Being limited in our condemnation of cases to those diagnosed by physical examination alone, we have endeavored to perfect and extend our inspection of infected herds as far as possible. On the occasion of the visit of an agent for the purpose of condemning or releasing an animal quarantined on account of suspected tuberculosis, if the quarantined animal is found to be affected with the disease the agent is directed to carefully and completely examine all other animals in the herd, and, if suspected cases are found, to notify the owner of that fact, have the suspected animals placed in quarantine, and then disposed of according to the methods followed in the original case. The history of tuberculosis in Massachusetts is that in certain herds and localities the Department has been called upon, at more or less regular intervals, to examine and condemn some one animal which has been quarantined by the inspector of animals on account of being suspected of having the disease. Believing that in many such instances other cases quite as dangerous as centers of infection may exist is our reason for inaugurating the practice of examining all the animals in the same herd. In the short time in which this method has been in operation we have found and destroyed many additional cases which under former methods would have been unrecognized, allowed to exist and spread the disease.

We have deemed it advisable, also, to have subsequent examinations made of these infected herds in order that cases which did not show symptoms on the previous inspection might be recognized at as early a stage of the disease as possible. Careful physical examination by competent men at regular intervals of all animals which have been exposed to tuberculosis cannot but result in a reduction of the number of tuberculous animals in the State, although on the inauguration of this method results might indicate that the number was increasing.

The Legislature having made provision for compensation to Massachusetts cattle owners for animals condemned and killed on account of being affected with tuberculosis, it becomes an economic necessity to provide for the careful examination of all neat cattle brought to this State for dairy purposes, in the protection of our own herds. In order to be positively assured of the health of all these dairy cattle, the use of tuberculin for diagnostic purposes in this work has been wisely ordered. The tuberculin testing of all neat cattle over six months of age which are shipped to Massachusetts for dairy purposes is therefore one of the principal duties of this Department.

The number of these animals shipped to Massachusetts the past year has very largely increased. The number received in 1915 was 15,368, and the number received in 1916 was 23,443, an increase of more than 8,000 animals. Between 5,000 and 6,000 of these cattle were accepted on tests made in other States, but the remainder were tested by agents of the Department at many different points in the State, by far the larger portion having been tested at the quarantine station in Brighton, all animals at the Watertown and Somerville quarantine stations being taken to the Brighton Stockyards for the test. Animals may be shipped to any one of these three stations unaccompanied by a permit of the Department, and not subject to certain regulations which apply when shipped to other points.

During the year 1916 the number of cattle tested at the Brighton Stockyards alone has increased from 4,858 in 1915 to 14,173, an increase of 9,315 animals. This shows a large increase in the number of incoming cattle at the quarantine stations and a decrease in the number received at other places. The Brighton Stockyards being closed for a large portion of the year 1915 operated to reduce the receipts at that point to a low number, and therefore the 1916 figures show an increase which is much greater than would have occurred had it not been for the existence of foot-and-mouth disease during 1915. When the Brighton Stockyards are closed interstate cattle go to other points in the State in larger numbers than when the stockyards are open. Therefore, the comparative increase this year as between the Brighton Stockyards and other points in the State is affected in that way. Brighton Stockyards being a point from which animals are taken to very many different cities and towns within the Commonwealth, the possibility of the spreading of infection therefrom, if an outbreak of foot-and-mouth disease occurred, made it necessary that the restrictions against shipments to that point be maintained longer than at any other point.

The tuberculin testing of interstate cattle at the Brighton Stockyards is now maintained at greatly increased expense, inconvenience and disadvantage both to cattle shippers, sellers and buyers, as well as to agents of this Department who are charged with the administration of the work. The cattle barn at those premises was destroyed by fire early in April, 1916, together with a large number of cattle which it contained, some 400 animals losing their lives in the fire. Since that time no arrangements have been made for reconstruction of a suitable building for the purpose of housing the cattle during the time they are undergoing the tuberculin test. Temporary quarters have been fitted up by the lessees of the premises, and our work is being carried on to the best of our ability under the trying circumstances. No doubt the present conditions have more or less influence on the results obtained by the application of the test.

Cattle arriving from out of the State should be put into comfortable quarters where they may obtain needed rest from a tiresome and generally a protracted journey. It is necessary that the test be applied very shortly after their arrival, in order that it may be completed before the public sale takes place the following day. Even though a comfortable barn were provided, where exposure to the severity of the weather might be avoided, the conditions are not particularly favorable to a proper test. Animals in quarters to which they are unused, handled by strange men, injected with tuberculin, roused up in order that their temperatures may be taken every two hours, thus being deprived of needed rest, are circumstances which very seriously interfere with the reliability of the test, and its application under these conditions is very unsatisfactory.

On this account it has been deemed necessary to make, a week later, a careful *retest* on such animals as appeared to be suspected as result of the first test. The method of this retest has been very much improved during the past year. On the day previous to its application the temperatures of all the animals held have been carefully recorded at exactly the same hours of the day at which they would be taken after the injection of the retest dose of tuberculin. This is for the purpose of comparing the temperatures of the animals on the two different days, and by that means judging just what effect has been produced by the tuberculin. This comparison has been of great aid in forming conclusions as to whether or not animals are diseased. We have made arrangements for the coming year for the application of the so-called ophthalmic test for tuberculosis, and consider that by the proper study of the result of the original test, the retest and the ophthalmic test, accurate conclusions can be arrived at in a large percentage of cases.

There is no test known to science which is absolutely infallible, but from the application of all the tests at hand, in addition to a careful physical examination, everything possible will be done to properly safeguard the interests of all concerned.

An accurate interpretation of the result of a tuberculin test is possible only if it has been conducted under favorable conditions; and as we have known this by our experience of the past few months, it is earnestly hoped that the conditions of stabling referred to will be improved in the near future, so that a most important branch of our work may be executed in a manner more satisfactory both to the shippers of cattle to this market and to those charged with the protection of the interests of the cattle buyers, and through them the dairy cattle interests of Massachusetts.

This work at the Brighton Stockyards is under the supervision of a veterinarian who has wide experience and who has been in the service of the Department for many years.

Tuberculin testing at other points in the State is in all cases done by an accredited man of training and experience. As it is the custom to accept records of tuberculin tests made by veterinarians of other States on cattle which are shipped to Massachusetts, every effort has been made to insure the proper performance of this work in accordance with our own regulations. At the present time these regulations call for an amount of work very much greater than that which has formerly been accepted as sufficient, and if it is found that the records submitted for approval and acceptance are not up to our present standard, the animals are retested by our own agents. In case any suspicion of dishonesty attaches to the work of an out-of-State veterinarian, he may be discredited and acceptance of tests made by him withheld in subsequent cases. It should be said that very seldom has the Department been called upon to discredit a test made by a qualified veterinarian either in this State or in any other State from which cattle are shipped to Massachusetts. Investigation has frequently revealed the fact that if dishonesty has been practiced the veterinarian is not the one to be accused of the same. As we require the approval of the live-stock authorities of every State whose veterinarians make tests on animals to be shipped to Massachusetts, it is our opinion that the interests of the Commonwealth are properly safeguarded in that direction.

According to section 11, chapter 90 of the Revised Laws, any person who has knowledge of or reason to suspect the existence of any contagious disease among any domestic animals in this Commonwealth, or that any domestic animal is affected with such contagious disease, whether such knowledge is obtained by personal examination or otherwise, shall immediately give notice thereof in writing to the Commissioner of Animal Industry, or to the inspector of animals for the city or town where the animal is kept, and a penalty is provided for failure to do so. An increasing number of veterinarians throughout the State who, in the process of tuberculin testing of cattle for private owners, have found animals reacting thereto, have realized that under the section of law referred to their duty is to report said reactors to this Department. The result of this has been that many more reacting animals have been brought to our attention during the past year than ever before. Although by law Massachusetts animals cannot be condemned and killed by this Department except as a result of physical examination, information as to the location of the disease is desirable, and we are given the opportunity to take up with the owner of suspected animals the disposal of them, and to suggest a way by which they may not become spreaders of the infection to other animals.

During this year 44 herds in which 256 animals were found by private veterinarians to react to the tuberculin test have been reported to this Department. Of this number, 32 were condemned and killed; on 72 the so-called "permit to kill" warrant was issued, the conditions of which are that the animal shall be destroyed under Federal or municipal inspection, and, in case the carcass is found to be diseased with tuberculosis to such an extent that it cannot be passed as fit for food, the Commonwealth reimburses the owner according to the provisions of law applying thereto. In case the carcass is passed by the inspector of slaughtering as fit for food, the owner receives his reimbursement from the slaughterer. Sixty-five of the animals above mentioned were immediately slaughtered by the owners, and on 87 of them the method of their disposal has not been recorded.

For a number of years the Department has been at the service of cattle owners who desired to have their herds tuberculin tested, provided they were willing to sign the following agreement: —

> Believing in the value of tuberculin as a diagnostic agent in cases of tuberculosis in cattle, and that the application of the tuberculin test does not cause any permanent injury to animals subjected to it, I hereby request that you apply the said test to my herd consisting of the following animals: —
>
> ....
>
> Of said animals,.......... have been owned within the State six months continuously prior to this date.

In asking to have my herd tuberculin tested at the expense of the State, I hereby agree to the following conditions: —

That all animals reacting to the test shall be killed under Federal or municipal inspection; for any animal which passes such inspection as fit for food I agree to accept as reimbursement such amount as the butcher will allow for the carcass, and not claim reimbursement from the Commonwealth; for any animal which the Federal or municipal inspector of slaughtering declares unfit for food on account of the tubercular lesions found, I am to receive from the Commonwealth full appraised value, not exceeding $40 for any one animal, in accordance with the provisions of section 6, chapter 90 of the Revised Laws.

I furthermore agree to disinfect the buildings in which the reacting animals were kept, according to the rules which the Department of Animal Industry prescribes.

I also agree to add to my herd in the future only such animals as have satisfactorily passed the tuberculin test.

Early in the year a movement was started on the island of Nantucket having for its object the eradication of tuberculosis from its herds of cattle. It was realized that owing to the geographical situation of that town an opportunity was presented such as existed in no other portion of the Commonwealth, and if full advantage was taken of the same it might be possible to successfully accomplish this object.

A number of public meetings were held at which agents of the Department offered to co-operate in every possible way in making the project a success. As a result of these meetings and conferences with agents of the Department, nearly 100 per cent. of the cattle owners of the island agreed to have a tuberculin test made of their animals under our auspices as a start in the work. The test was immediately applied, and 42 herds comprising 324 head of cattle were subjected to it; 36 animals were condemned and killed in accordance with the results obtained, and autopsies were made in every case. As a favorable start had been made, it was advised that subsequent tests be applied in accordance with an intelligent continuation of the plan. It was also advised that town officials formulate and put in force regulations providing that no bovine animals should be landed on the island unless the same had passed the tuberculin test. If, in addition to these regulations, the board of health would order that no milk be sold on the island unless the same had been produced from tuberculin-tested cows, it was our prediction that at the end of a certain period of time the entire success of the project would be accomplished. This regulation and order were not made, however, and it has also happened that a certain small number of the owners have not been in perfect accord with the majority interested in this movement, have not been in complete sympathy with the necessity for its provisions, and therefore have not completely carried out all the requirements necessary in testing and disposing of reactors. In our opinion the possibility of full success of the project has therefore been jeopardized to a certain degree; but we feel confident that, a successful start having been made, a *unanimous* agreement will finally be entered into, with the promise of ultimately accomplishing the desired object. It should be realized by the citizens of Nantucket that an opportunity really exists for the establishment of perfect health conditions of their cattle as far as tuberculosis is concerned, and that it cannot fail to be attended by an increased reputation of the locality as a perfect health resort, largely on account of the possibility of the production of milk and other animal food uninfected with the germs of tuberculosis; also that, in case the disease is finally proven to be eradicated, a great business opportunity will exist in the raising of tuberculosis-free cattle to supply an increasing demand for dairy animals from non-infected localities, where the animals are not only free from this disease, but in addition are not *exposed* to the danger of infection on account of regulations in force preventing the possibility of the disease regaining a foothold.

Following are various tables showing the extent of the Department's work in connection with the control of tuberculosis in Massachusetts for the year ending Nov. 30, 1916: —

Massachusetts Cattle reported.

Reported as diseased by inspectors, veterinarians, department agents and owners,			1,885
Disposed of as follows: —			
Released,		284	
Condemned,		1,237	
Condemned on "permit to kill" warrant,		26	
Permit to kill, no lesions,		51	
Died or killed by owners,		51	
Held, action not yet taken,		29	
			1,678
Tested on voluntary request,	559		
Disposed of as follows: —			
Released,	(456)		
Condemned on "permit to kill" warrant,		63	
Permit to kill, no award,		40	
			103
Reactors reported on private test,	256		
Disposed of as follows: —			
Released,	(87)		
Killed by owners,	(65)		
Condemned,		32	
Condemned on "permit to kill,"		35	
Permit to kill, no award,		37	
			104
Total,			1,885

Massachusetts Cattle examined by Agents.

Physical examination (1,025 herds),	10,884
Tuberculin tested,	559
Total,	11,443
Number condemned on physical examination,	1,269
Number condemned on tuberculin test,	103
Total,	1,372
Percentage of tubercular animals in total number physically examined and tuberculin tested,	12

Interstate Cattle Tuberculin tested.

Cattle tested at the quarantine station at Brighton,		14,173	
Cattle tested by veterinarians outside the State: —			
Received at Brighton,	1,390		
Received at other points,	4,299		
		5,689	
Cattle tested by agents of the Department at points other than the quarantine station,		3,443	
Cattle awaiting test,		138	
			23,443

Disposition of Above Cattle.

Cattle condemned on Brighton test,	354	
Cattle killed on "permit to kill," Brighton test,	158	
Died during test,	1	
Cattle released from Brighton as free from tuberculosis,	15,050	
Cattle condemned on test at other points in State,	115	
Killed on "permit to kill" after first test,	9	
Awaiting test or retest,	145	
Released as free from tuberculosis,	7,611	
		23,443

The following statistics show in detail the record of interstate cattle shipped to points in the State outside of the quarantine stations: —

Report of Cattle brought into State during the Year to Points outside of the Quarantine Stations.

For dairy and breeding purposes, tested before shipment,	4,299	
For dairy and breeding purposes, tested after arrival,	3,443	
For dairy and breeding purposes, awaiting test,	138	
		7,880
Neat cattle on which no test was required, classified as follows: —		
Cattle for immediate slaughter,	2,017	
Calves for immediate slaughter,	4,435	
Dairy calves under six months old,	194	
Cattle returned from out-of-State pastures,	371	
Died before test could be made,	3	
Returned from breeding stables in other States,	2	
Remaining in State for brief periods only,	24	
Returned from sales in other States,	21	
For temporary stay at sales or exhibitions,	1,054	
		8,121
Total for all purposes,		16,001

The animals brought into the State for sale or exhibition purposes comprised 129 head at sale held by the Fasig-Tipton Company of New York City, 700 at the National Show at Springfield in October, and 225 at exhibitions or fairs at other places.

Nearly all of the total number of animals given above were brought into the State on permits issued by the head of the Department, only 328 having been brought in unaccompanied by permits, reported to the Department by railroad agents, local inspectors or others.

The following figures show the disposition of animals that were brought into the State to points outside the quarantine stations at Brighton, Watertown and Somerville, which failed to pass the tuberculin test satisfactorily: —

Condemned on first test,	60
Condemned on second test,	54
Condemned on third test,	1
Killed on "permit to kill" after first test,	9
Awaiting second test,	3
Awaiting third test,	4
	131

Results in the Above Cases.

Found diseased on post-mortem examination,	118
Cases in which no lesions were found, paid for by State,	6
Animals awaiting second or third test,	7
	131

There were 1,494 permits issued during the year for the shipment of neat cattle to points in the State other than the three quarantine stations.

Eighty-six permits were issued allowing cattle to be brought into the State for exhibition purposes, and seven allowing cattle to be returned from exhibition in other States. Sixteen permits were issued allowing cattle to be pastured in the State during the summer season, four permits were issued to persons living near the border line for returning cattle from out-of-State pastures from time to time during the season without being tested or tagged, and two permits were issued allowing oxen to be worked on the border line temporarily without test.

Two hundred and sixty of the permits issued were not used, and ten on which no report had been received at the close of the year were carried over and will be included in the report of the next succeeding year.

During the spring and early summer Massachusetts veterinarians tested with tuberculin 729 head of cattle that were to be sent into other States for pasture during the season, mostly into New Hampshire, and 84 animals were tagged for the same purpose, making a total of 813 head. Test charts and tag numbers are kept on the files of the Department, in order that these animals may be identified upon returning to their home State in the fall. Many of them were brought to the Brighton Stockyards and released there; others were returned to premises of owners in other parts of the State.

The above statistics show a comparatively small number of cattle and calves brought into the State on permits for purpose of immediate slaughter, this number being only those of which the office of the Department keeps record, and not representing the amount of business in slaughter animals, as under present regulations animals may be shipped to slaughtering establishments which are under United States government inspection unaccompanied by permit from this Department, there being several such establishments within the State.

Collecting the statistics from various sources, it is possible to give in a brief summary, with almost perfect accuracy, the total number of bovine animals received in Massachusetts from other States. These figures are shown below.

Bovine Animals shipped into State during the Year ending Nov. 30, 1916.

Dairy cattle requiring test,	23,443	
Dairy cattle requiring no test, mostly for temporary stay in the State,	1,081	24,524
Dairy calves under six months old,		194

Animals for Immediate Slaughter.

Cattle received at the quarantine stations,	102,750	
Cattle received at other points, under supervision of the Department,	2,017	
Cattle received at slaughtering establishments under Federal inspection, at Haverhill, West Newbury and Springfield,	496	105,263

Calves received at the quarantine stations,	168,635	
Calves received at other points, under supervision of the Department,	4,435	
Calves received at slaughtering establishments under Federal inspection, as above,	1,576	
		174,646
Total for all purposes,		304,627

The Department keeps records of all animals received at the several quarantine stations, also the States from which neat cattle are shipped, as shown by the following figures: —

Receipts of Stock at the Watertown Stockyards for the Year ending Nov. 30, 1916.

New Hampshire cattle,	5,346
Vermont cattle,	5,528
Massachusetts cattle,	771
Calves,	18,642
Sheep and lambs,	894
Swine,	5,527

Receipts of Stock at the New England Dressed Meat and Wool Company's Yards at Somerville for the Year ending Nov. 30, 1916.

Maine cattle,	2,726
New Hampshire cattle,	2,838
Vermont cattle,	10,757
Massachusetts cattle,	109
Western cattle,	5,320
Canada cattle,	1,822
Calves,	76,244
Sheep and lambs,	293,131
Swine (at Squire's, 613,630; at North's, 582,300),	1,195,930

Receipts of Stock at Brighton for the Year ending Nov. 30, 1916.

Maine cattle,	11,228
New Hampshire cattle,	9,990
Vermont cattle,	8,028
Massachusetts cattle,	13,535
New York cattle,	11,654
Western cattle,	27,627
Canada cattle,	1,034
Calves,	73,749
Sheep and lambs,	6,603
Swine,	63,516

Section 111 of chapter 75 of the Revised Laws, as amended by chapter 243 of the Acts of 1907, requires rendering companies to report to this Department cases of glanders, farcy or tuberculosis found by them, and the information thus furnished is of considerable value in bringing to the attention of the Department cases of these diseases which otherwise would not be known. A table of reports of rendering companies follows: —

Reports of Rendering Companies.

RENDERING COMPANIES.	Number of Reports.	Number of Cases of Glanders.	Number of Cases of Tuberculosis.	Number of Glanders Cases not previously reported.	Number of Tuberculosis Cases not previously reported.
W. H. Abbott, Holyoke, ...	2	3	-	1	-
Butchers' Rendering Company, Fall River,	3	2	1	-	-
William S. Higgins, Saugus, . . .	4	-	4	-	-
Home Soap Company, Millbury, . .	17	11	18	-	-
Lowell Rendering Company, . . .	16	-	27	-	1
James E. McGovern, Andover, . . .	13	13	14	2	-
Muller Brothers, Cambridge, . . .	25	43	3	-	1
William H. Nankervis, Marlborough, .	4	5	1	-	-
New Bedford Extractor Company, . .	3	3	-	-	-
New England Rendering Company, Brighton.	13	22	1	2	-
Parmenter & Polsey Fertilizer Company, Peabody.	26	20	8	1	-
R. & B. Tallow Company, Saugus, . .	2	2	-	-	-
N. Roy, Jr., Fall River, ...	47	71	14	11	1
Sherborn Rendering Company, . .	6	3	14	-	-
Springfield Rendering Company, . .	3	3	-	-	-
N. Ward Company, Boston, . . .	47	143	1	3	1
Whitman & Pratt Rendering Company, North Chelmsford.	9	2	10	-	9
S. Winter Company, Brockton, . .	10	13	-	-	-
Worcester Rendering Company, . .	10	9	2	1	1
Wunsch Manufacturing Company, Pawtucket, R. I.	3	-	4	-	-
Totals, ...	263	368	122	21	14

For several years, at the request of the United States Department of Commerce and Labor, a report of the receipts of all live stock at Boston has been sent to Washington each month. The following table shows the receipts by months for the past year: —

Receipts of Live Stock at Boston for Twelve Months ending Nov. 30, 1916.

For Month of —	Cattle.	Calves.	Sheep.	Swine.	Horses.
December,	12,463	11,001	21,161	164,657	1,900
January,	8,500	7,719	20,226	153,941	2,044
February,	10,164	11,927	18,309	178,621	2,488
March,	8,120	14,578	11,917	111,737	1,841
April,	7,085	16,098	9,442	77,948	2,250
May,	8,576	20,646	20,558	100,726	2,914
June,	7,567	15,666	28,909	66,373	2,194
July,	7,539	14,999	30,125	79,158	2,450
August,	9,774	11,932	37,206	61,306	1,822
September,	9,383	11,355	27,301	55,304	1,781
October,	13,833	17,316	40,337	92,364	2,358
November,	15,309	15,398	35,137	122,838	1,769
Totals,	118,313	168,635	300,628	1,264,973	25,811

MISCELLANEOUS DISEASES.

Anthrax. — This is a disease which is widely spread throughout the world, causing the death of many thousands of animals as well as a large number of human beings, especially those engaged in the handling of hides of animals infected with it. It therefore becomes necessary to prevent in every way possible the prevalence of this disease in this State, both on account of the economic loss of valuable live stock and the possibility of infection of human beings. The activities of the Department in this direction consist of preventive inoculation of all animals on premises where the disease has occurred, and on the notice of an outbreak at any point we require that all animals on the infected premises be immediately inoculated with anti-anthrax serum and spore vaccine as a measure of safety. This inoculation is in most cases effective in immunizing animals for a period of twelve months, thereby preventing further extension of the disease at that point. For the reason that the spores of the causative agent of this disease remain lodged in the soil in an active state for many years in infected localities, it is necessary to continue this preventive inoculation from year to year on farms where the disease has once appeared. As infected animals ordinarily die within a few hours of the onset of the disease, the first animals attacked in a particular locality have generally died before treatment could be applied. During the past year 12 cattle and 3 sheep have died, an increase of one case over the record of 1915. Our preventive inoculation work has, however, increased considerably, 83 animals having been inoculated in 1915, and 105 head of cattle and 39 sheep having been inoculated in 1916, on 13 different premises located as follows: in the town of Clinton 1, Dudley 1, Great Barrington 5, Northborough 1, Shrewsbury 1, Sheffield 3, Wendell 1. Our efforts have been directed toward saving the animals exposed to the same conditions of pasturage and feed as those which have died.

In December, 1915, a serious outbreak of this disease was reported from a number of farms situated along the course of the Johns River in the town of Dalton, N. H. The medium through which the animals became infected was subsequently found to be hay which had been cut on the meadows along the course of that river. A solution made from this hay proved fatal to small animals injected with it. As Massachusetts receives from that particular section large numbers of animals and frequent shipments of hay and other products, it was deemed advisable to place a restriction on shipments of cattle and fodder from towns along the course of the Johns River and the Connecticut River, into which the former stream flows. The following order was therefore formulated, approved by the Governor and Council, and promulgated under date of Dec. 29, 1915: —

ORDER NO. 24.

DEC. 29, 1915.

To Transportation Companies and All Persons whom it may concern:

Whereas the disease known as anthrax, which is a contagious disease and is so recognized under the laws of this Commonwealth, prevails among cattle in certain sections of the State of New Hampshire, whence animals and merchandise are shipped to Massachusetts, and whereas it is deemed necessary, for the protection of the live-stock interests of the Commonwealth, to restrict shipments from the districts in which this disease is known to exist,

Now, therefore, acting under and by virtue of the authority vested in me by the provisions of chapter 90 of the Revised Laws and chapter 608 of the Acts of 1912, and all acts in amendment thereof and addition thereto and all other authority me hereto enabling, I do hereby make the following order and regulation: —

The provision of section 1 of Department Order No. 5, which allows the shipment of neat cattle from any State or territory of the United States to the Union Stockyards in the town of Watertown, the Brighton Stockyards in Brighton, or the premises of the New England Dressed Meat and Wool Company in the city of Somerville, unaccompanied by a permit from the Commissioner of Animal Industry, is hereby modified as follows: —

No horses, cattle, sheep, other ruminants, swine, hay, grain or fodder of any kind shall be shipped to *any point* in the State of Massachusetts from stations on the Boston & Maine and the Maine Central Railroad systems which lie between Lancaster, N. H., or Lunenburg, Vt., on the north, and Woodsville, N. H., or Wells River, Vt., on the south, unless accompanied by a permit from the Commmissioner of Animal Industry.

This order shall take effect upon its approval.

LESTER H. HOWARD,
Commissioner of Animal Industry.

Approved in Council, Dec. 29, 1915.
E. F. HAMLIN,
Executive Secretary.

This order was maintained in force until the close of the year, soon after which, it having been proved that anthrax no longer existed in that locality, it was revoked. During this period no case of the disease has appeared in Massachusetts the source of which could be traced to the localities above mentioned.

Blackleg, or symptomatic anthrax, is another disease which is very widespread throughout the world, and causes the death of large numbers of animals, especially such as have not reached adult age. The same necessity for yearly preventive treatment exists in the control of this disease as in that of anthrax. Preventive treatment is very successful, and although the number of fatal cases of this disease in Massachusetts is very small, only seven animals having died during the past year on five different premises, the preventive inoculation has been applied to 161 animals on 95 different premises in 35 towns, as follows: —

Adams,	1	Northampton,	1
Andover,	1	Orange,	1
Ashburnham,	4	Pittsfield,	1
Ashby,	11	Prescott,	10
Ashfield,	1	Princeton,	2
Becket,	2	Rowe,	1
Dalton,	1	Rutland,	1
Dana,	3	Savoy,	1
Granville,	1	Shelburne,	2
Great Barrington,	3	Southampton,	4
Greenwich,	2	Sterling,	2
Lee,	2	Tyringham,	2
Leicester,	1	Warwick,	5
Lenox,	2	Washington,	5
Littleton,	1	Westhampton,	1
Middlefield,	9	Williamstown,	3
Montague,	1	Winchendon,	1
New Marlborough,	6		

Wherever losses from this disease have at any time occurred owners have been very anxious to have preventive treatment applied, and many new applications for it are yearly received.

Another disease increasingly prevalent each year is *hemorrhagic septicemia,* which this past year has not only affected cattle but also goats and swine. Differential diagnosis is sometimes difficult in the field as between anthrax, blackleg and hemorrhagic septicemia, and a positive diagnosis is sometimes reached only as a result of laboratory examination of specimens from carcasses. Our records show that the disease has appeared in 15 head of cattle on six premises in the towns of Medfield, North Adams, Saugus, Shrewsbury, Waltham and Wendell, also in six goats on a farm in the town of Bridgewater. About 300 head of swine have also been affected on five different premises in the towns of Littleton, Richmond, Stoughton, Tewksbury and the city of Worcester. Previous records of the Department do not show that it has before appeared among swine in this State. Our attention has undoubtedly been directed to this disease in swine in many instances on account of our active work in the suppression of hog cholera, as we are frequently called to herds supposed to be affected with cholera where a careful diagnosis proves the infection to be hemorrhagic septicemia. Treatment by inoculation against this disease is being actively investigated in our own laboratory under the direction of an agent of this Department.

Ten cases of *actinomycosis* have been reported from premises in the Brighton district of the city of Boston, in Bridgewater, Dudley, Leominster, Monterey, Stoneham, Dana and Tisbury, and one case reported late in 1915 has been killed during the past year in the town of Somerset. Of the 10 reported cases in 1916, 6 have been killed, 2 in the town of Dana have been released, 1 is still held under observation in the town of Tisbury and the 1 reported from Monterey was found to be a case of tuberculosis.

Cases of tuberculosis in swine are frequently reported to us by slaughtering establishments, and it generally happens that the source of the disease is to be found among the cattle on the farms where the swine have been kept, especially if they have been in close contact with the cattle.

Mange has been reported as affecting 449 head of cattle in 17 herds, 52 horses and 1 dog. The premises on which this disease has appeared are located in the city of Boston, the towns of Dracut, Lexington, Ludlow, Lincoln, Merrimac, Millis, Methuen, New Marlborough, Richmond, Whitman, Southbridge and also the city of Leominster. Treatment of this disease is ordinarily very successful if owners or attendants can be induced to faithfully carry out simple directions of local application and medicinal treatment, which are inexpensive but necessarily very inconvenient in application.

Foot-and-mouth disease was reported as existing in the cities of Brockton and Gloucester and in the town of Wellesley. Prompt investigation of these reports, however, proved that the affection was not foot-and-mouth disease.

A parasitic disease of sheep known as *nodular disease* seems to be more or less prevalent in Massachusetts, and has been reported to us as existing in the towns of Bedford, Danvers, Needham and in the cities of Taunton and Worcester. This disease is due to an intestinal parasite which causes serious loss through the death of many young animals, and also by the prevention of proper growth of others.

The Department has been frequently called upon to make diagnoses and suggest treatment of animals not affected with disease of a contagious character. This service has been freely rendered upon application, although the Department is charged with the control of contagious diseases only. During the past year we have been called upon to make diagnosis and act in an advisory capacity in the following cases, the diseases not being listed in the law as contagious: anemia, acute indigestion, forage poisoning from which four animals were sick in the city of Taunton, one of which died, and five animals on four premises in the towns of Franklin, Hardwick, Plainfield and Montague. One case of glanders in a dog was reported in the town of Andover, which, however, was not investigated, the animal having been killed and buried.

Cerebrospinal meningitis was reported by a veterinarian as having caused the death of two pigs in the town of Bridgewater.

Two cases were reported as *anterior poliomyelitis* in horses, one in the city of Cambridge and one in the city of Quincy. Complete investigation, however, followed by post-mortem examination, proved that diagnosis to have been incorrect.

ANNUAL INSPECTION OF FARM ANIMALS AND PREMISES.

The inspection of neat cattle, other farm animals and premises upon which they are kept, which work was necessarily suspended during the year 1915 on account of the prevalence of foot-and-mouth disease, was resumed in 1916.

Inspectors of animals are nominated by selectmen of towns or mayors and aldermen of cities, and their nominations are subject to the approval of the Commissioner of Animal Industry. Their duties consist of examinations of barns, stables and other enclosures in which live stock is kept, with reference to their situation, cleanliness, light, ventilation and water supply, and the general condition and cleanliness of the live stock, a detailed report of which they make to the Department, with names and residences of owners. Upon receipt of the reports at the Department's office they are carefully inspected and tabulated, and if the inspectors of animals are not successful in having owners correct unsatisfactory conditions of live stock or premises, a district agent of the Department is detailed to consult with the owner and endeavor to have such conditions remedied.

Authority is given by chapter 381 of the Acts of 1911 to the Commissioner of Animal Industry and his agents to inspect all farms, stables, pastures, yards and other places where cattle, other ruminants or swine are kept. They are also authorized to enforce all regulations made respecting sanitary conditions of the live stock and premises.

During the few years in which this latter work has been done the combined efforts of the inspectors of animals and the agents of the Department of Animal Industry have made a very notable improvement in the conditions referred to.

Below is a table showing this work in detail for the year ending Nov. 30, 1916.

Number of herds inspected,	28,750
Number of neat cattle inspected,	228,783
Number of cows inspected,	152,076
Number of herds kept clean and in good condition,	28,224
Number of sheep inspected,	17,483
Number of swine inspected,	78,532
Number of goats inspected,	1,451
Number of stables inspected,	29,728
Number of stables well located,	27,331
Number of stables well drained,	29,471
Number of stables well ventilated,	29,320
Number of stables well lighted,	28,878
Number of stables kept clean,	28,058
Number of stables with good water supply,	29,589
Number of stables improved since last report,	3,402
Number of premises on which swine are kept,	10,642

The inspectors of animals of two towns have failed to render report of their duties.

FINANCIAL STATEMENT.

Appropriation for the salary of the Commissioner, chapter 22, Special Acts of 1916,		$3,500 00
Total expenditure,		$3,500 00

Appropriation for clerical assistance and contingent expenses, chapter 22, Special Acts of 1916,		$9,600 00
Expended during the year for the following purposes: —		
Salaries of clerks and stenographers,	$4,860 41	
Books,	91 85	
Express and messenger service,	200 77	
Extra clerical service,	395 00	
Postage,	768 81	
Printing report,	162 17	
Other printing,	596 80	
Telephone and telegrams,	637 10	
Stationery and office supplies,	670 22	
Typewriters, adding and sealing machines,	536 20	
Other office devices,	197 40	
Expenses of the Commissioner,	329 25	
Sundries,	57 67	
Total expenditure,	$9,503 65	
Unexpended balance,	96 35	
		$9,600 00

Appropriation for the extermination of contagious diseases among domestic animals, chapter 286, Special Acts of 1916,		$152,000 00
Expended during the year for the following purposes: —		
1,455 head of cattle condemned and killed on account of tuberculosis in 1914, 1915 and 1916, paid for in 1916,	$50,080 33	
330 horses condemned and killed on account of glanders ard farcy in 1914, 1915 and 1916, paid for in 1916,	16,435 00	
Services of regular agents,	29,591 15	
Services of *per diem* agents,	9,037 00	
Labor hired,	377 70	
Traveling and other expenses of agents,	15,909 62	
Veterinary supplies,	208 44	
Expenses of killing and burial,	172 00	
Ear-tags, punches, etc.,	2,348 45	
Laboratory and experimental expenses,	3,943 98	
Expense of travel allowed inspectors of animals,	541 37	
Quarantine claims,	9,200 37	
Sundries,	120 45	
Total expenditure,	$137,965 86	
Unexpended balance,	14,034 14	
		$152,000 00

The average price paid for condemned cattle for the year was $34.41.

There has been received during the year from the sale of hides and carcasses of condemned animals $1,506.43, and for the testing of cattle for non-resident owners $3,397, a total amount of $4,903.43.

Claims for 59 head of cattle condemned and killed as tuberculous during the year remain unsettled, to be paid for on proof of claims, the appraised value of which amounts to $1,897.

Claims for 52 horses condemned and killed during the year because affected with glanders remain unsettled, to be paid for on proof of claims, the allowance for which under the law will amount to $2,525.

Respectfully submitted,

LESTER H. HOWARD,
Commissioner of Animal Industry.